

Winter 2002

## Winter 2002

NSU Oceanographic Center

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# Currents



Winter 2001/2002 • Volume XVI, Number 1

## MANGROVE NURSERY SPROUTS AT NSU

For the largest mangrove nursery around, look no further than our back yard. NSU recently extended its wetlands restoration work. In a flurry of activity, people were seen rummaging through south Florida forests for the sprouted seeds (propagules) of red mangroves (*Rhizophora mangle*) to transplant to a pond on the Oceanographic Center grounds. Propagules are only available during late fall months, so the window was closing as students and other workers rushed to collect the more than 600,000 needed for the nursery venture. Now they are just beginning to sprout, and you can compare them to one-year-old plants previously grown at the Aquaculture Research Center (ARC). Our plants have been used to restore thousands of acres of wetlands with major clients including the Florida Department of Transportation, the U.S. Environmental Protection Agency, the Florida Department of Environmental Protection, and many large and small developers. Internationally, we have supplied plants and/or consulting services to Ecuador, Venezuela, the Dominican Republic, Jamaica, Grand Cayman, the Bahamas, France, Kuwait, Saudi Arabia, Nigeria, and many others. With little advertising, the ARC had demands for almost 200,000 last year, and now we hope to increase sales through increased marketing, a new Web page ([www.mangrovesdirect.com](http://www.mangrovesdirect.com)), and business help from Phil Friedman of the Wayne Huizenga Graduate School of Business and Entrepreneurship. 🐡



Mangrove seedlings in pond at NSU's Oceanographic Center



One-year-old mangroves, originally grown at the ARC, with the new seedlings in the background.



## The year 2001 ended, and 2002 began with an explosion of activities in aquaculture.



The Aquaculture Research Center complex

Big on the list was the beginning of a five-year lease of the Aquaculture Research Center Complex, funded by a grant from NSU and a private investor for \$500,000 (year one). The first few months of this agreement between NSU and the town of Davie are being spent constructing and upgrading facilities in three areas:

- The Aquaculture Research Center (ARC)—This is the original facility created from an abandoned water plant and operated by NSU for five years for the town of Davie. In culture are tilapia, herbs, and vegetables, all of which are sold to local seafood markets, restaurants, or health food stores.

- Wetlands Research Center—once wholly located in Davie, this crop of marine and freshwater wetlands lived on aquaculture effluent from the ARC. With expansion into other fish and shellfish, the marine wetland plants (primarily mangroves) were relocated and expanded at vacant grounds of NSU's Oceanographic Center.

- Intensive Culture Research Center—Specializing in the intensive culture of high value species, this facility is the primary expansion into lands being leased

from the town of Davie. American eel (*Anguilla rostrata*) and marine shrimp (*Litopenaeus vannamei*) are the species in culture here. Eels were test-cultured and marketed (as smoked, Chinese, and Italian specialties) in the previous year, and they show much promise as high-end products. The current stock of 150,000 is planned for expansion to more than twice that number in a series of new concrete tanks. The culture of marine shrimp in freshwater is the most exciting new research in aquaculture today (see student news—starting on this page). The leased lots east of the ARC are the planned locations of ponds for culture of the high-value shrimp.

Other aquaculture projects are also underway at this time, including

- The Collier City Aquaculture and Hydroponics Complex—This facility, funded by the state of Florida for \$250,000 in year one, and with promises of additional funds for expansion and processing, is a first-of-its kind, minority-owned and operated, inner-city project. The facility is the first link of a chain connecting low-income, inner-city, and urban neighborhoods, and will extend northward across the state.

- The OC Shrimp Hatchery—On the books for six years at the OC, and with contributions by many graduate students over the years, this project is poised to provide research and production in Florida pink shrimp (*Farfantepenaeus duorarum*) with upcoming funding. Pink shrimp, the favorite of once-booming bait and food shrimp industries, is the only native species with potential for commercial aquaculture.

- The DOT Seagrass Culture Project—Funded by a two-year, \$94,000 grant from the Florida Department of Transportation, this project addresses the urgent need to understand the ecology and culture of rare and endangered local seagrasses such as *Halophila decipiens* and *H. johnsonii*. First-year results are promising for restoration and creation of beds of these disappearing plants. 🌿

## Aquaculture Student News

In the forefront of shrimp culture research and responsible for starting a new wave of shrimp production, Ph.D. student **David McMahon** (M.S. 1998) is operating a 40-acre shrimp farm (Ocean Boy) in LaBelle, Florida, and a large processing facility in Clewiston. He is also constructing a large shrimp farm in Clewiston. Based on in-progress dissertation research on the freshwater culture of marine shrimp, McMahon embarked on this multi-million dollar project, funded by private investors. The subject of articles and news exposure, McMahon's first-year success has spawned much interest by the state of Florida and future shrimp farmers. Recently joining McMahon's operation is OC alumnus **Erik DeMicco** (M.S. 2000) whose related research was on the feeding of larval shrimp.

A master's student also working at McMahon's Ocean Boy Farms, **John Reguzzoni**, is conducting research on the unique diets of the new Florida Sweet Shrimp®. As part of a bio-security program to prevent diseases from entering inland shrimp culture operations (the potential downfall of Central American and eastern shrimp culture), Reguzzoni is testing fat and protein substitutes for the fishmeal used in diet formulations. One fat source he tested

was chicken fat from Tyson® Foods, which begs the question, “Now do your shrimp taste like chicken?” John says, “No, but, they might bite your ear off.”

A long-term researcher at the OC and responsible for constructing and maintaining seawater operations, M.S. student **Richard Hubbard** recently completed his research in marine organism larviculture. He has given a number of presentations on the subject, and in cooperation with and spear-headed by M.S. researcher **Ray Wolcott**, he has opened the possibility of edible sea urchin culture. Wolcott recently completed his M.S. research on the breeding and culture of sea urchins (*Lytechinus variegatus* and *Tipneustes ventricosus*). These two, and the current aquaculture students above, are actively presenting their research at science meetings—more than a dozen papers in 2002.

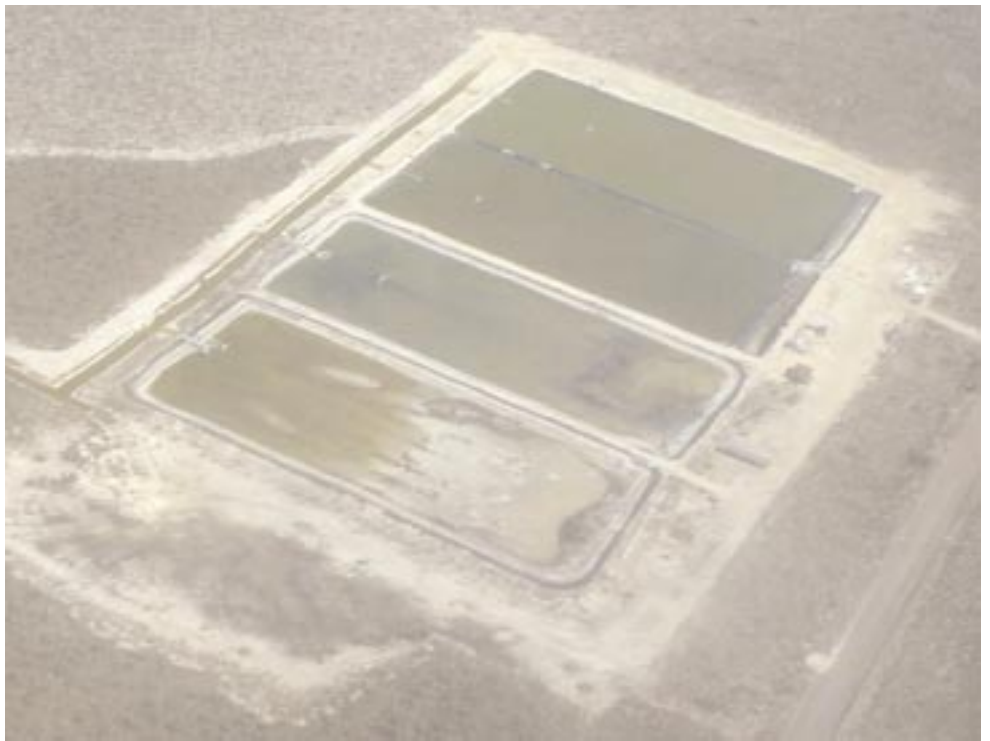
Aquaculture graduates are actively involved (and well-paid) in careers in aquaculture. Alumnus **Sofia (Russell) Thompson** (M.S. 1994) has been managing a shrimp farm in Freeport, Bahamas, for five years. Her 10-acre farm is small compared to many, but it is the largest and longest existing farm in the Caribbean, capable of producing more than 100,000 pounds of shrimp per year. While she stocks this year's crop of baby shrimp she is also expecting her own baby, her second.

**Ken Cook** (M.S. 1994) conducted research in shrimp and tilapia culture and he likewise embarked on a career in aquaculture. Now co-owner of the landscape firm Plant Creations, Inc. (Homestead), he specializes in the culture and landscaping of wetlands and hammock environments. His mangrove nursery was the largest in the United States (before the OC's), and the plants are used in projects throughout Miami-Dade and Monroe Counties. **Helen Dixon** (M.S. 1993) performed her thesis research in Belize shrimp culture. She was recently introduced as a guest speaker at Aquaculture America as the person credited with single-handedly curing shrimp disease in Belize. She is an internationally recognized shrimp culture consultant, aiding in operations throughout Central and South America and now as consulting manager to E & E Shrimp Farm in Costa Rica, she remains in the forefront of environmentally responsible and sustainable shrimp culture.

The first aquaculture graduate at NSU, **Rami Alon** (M.S. 1990), realized his goal of managing an aqua Kibbutzim (cooperative farm) in Israel. Falling in love with



Ocean Boy Farms, Inc.



Lucayan Aquaculture, Ltd., the Freeport, Bahamas, farm managed by NSUOC alumnus Sofia (Russell) Thompson.

aquaculture, Alon abandoned a secure career in the jewelry business in lieu of more rewarding success. NSU aquaculture's first Ph.D. student **Brian Hicks** (Ph.D. 1999) conducted pioneering research into pompano (*Trachinotus carolinus*) culture. He also supervised M.S. students in pompano culture during his tenure at the OC, and he is responsible for setting up much of

the present aquaculture facility. An active consultant in marine fish culture, he is also a teacher in Stuart, Florida. On the faculty at Palm Beach Community College and completing her research in the culture and ecology of freshwater crayfish (*Procambarus allani*), **Peggy Van Arman** recently passed her preliminary exams and is finishing her dissertation. 🐡



## People on the Move

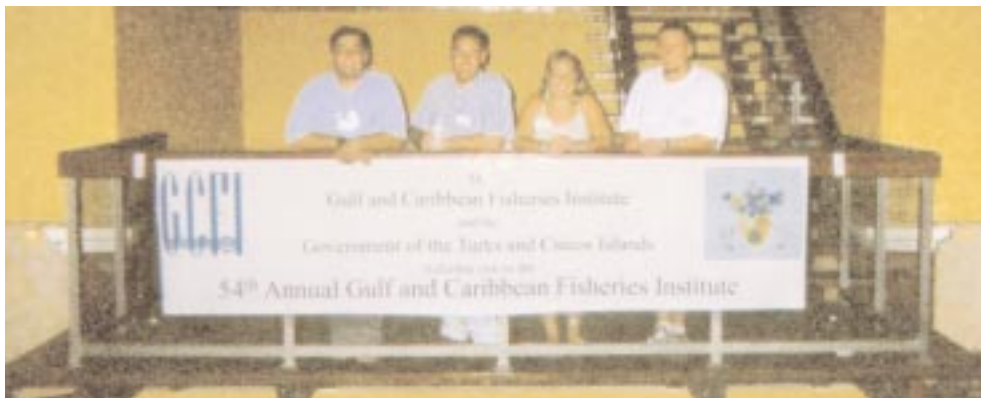
OC students, **Paul Arena**, **Fleur Harttung**, **Rob Baron**, and **Lance Jordan** attended the 54th Meeting of the Gulf and Caribbean Fisheries Institute, Providenciales, Turks and Caicos, November 12–17, 2001.

Two posters were presented: “The Nearshore Hardbottom fishes of Broward Co., Florida, USA,” by Rob M. Baron, Paul T. Arena, Fleur M. Harttung, Danny P. Fahy, Brian Buskirk, Cheryl Miller, Lance K. B. Jordan, and Richard E. Spieler; and “Spatial Variability of Coral Reef Fish Assemblages Offshore Broward Co., Florida,” by Fleur M. Harttung, Paul T. Arena, Lance K. B. Jordan, Brian D. Ettinger, and Richard E. Spieler. Lance Jordon presented a talk titled, “Spatial Variability of Coral Reef Fish Assemblages Offshore Broward Co., Florida.”

**Carol Fretwell**, coordinator of administrative operations for NCRI, recently returned from a trip to the state capital for the Annual Oceans Day observance, cohosted by the Florida Institute of Oceanology (of which OC is one of its newest members), the Ocean Alliance, and Mote Marine Laboratories. The day-long event featured table-top displays on the second and third floors of the Capitol Rotunda from many ocean research facilities in Florida, with the banners of the individual institutions draped over the railings



*Carol Fretwell in front of NSU exhibit*



*(L-R) Rob Baron, Paul Arena, Fleur Harttung, and Lance Jordon*



*(On left) Alexander Soloviev, Julian McCreary, Dennis Moore. (On right) NSU graduate, Roland De Szoeke with his student and her husband.*



*Zuojun Yu (with her son), Mark Wimbush, Pern Niiler, and Andrew Moore.*



Meeting together in Los Angeles on the way to the AGU meeting in Honolulu are, left to right: (seated) NCRI research scientist and OC adjunct professor, **Bernhard Riegl**; **Eileen Riegl**; Robert Ginsburg, professor, University of Miami RSMAS; (standing) **Richard E. Dodge**, NCRI executive director and OC dean; Gregory S. McIntosh, NCRI director of Caribbean and Latin American region; and Gregor Hodgson, Reef Check Global Survey Program coordinator and visiting professor, UCLA.

(including NSU's), and a large suspended banner showing an outline of Florida, indicating more than a dozen research facilities that are FIO members. Outside, in the Ellipse, large, truck-sized displays such as the mobile aquarium from Mote, shared the area with NASA walk-in exhibits, also in Tallahassee for "NASA Day."

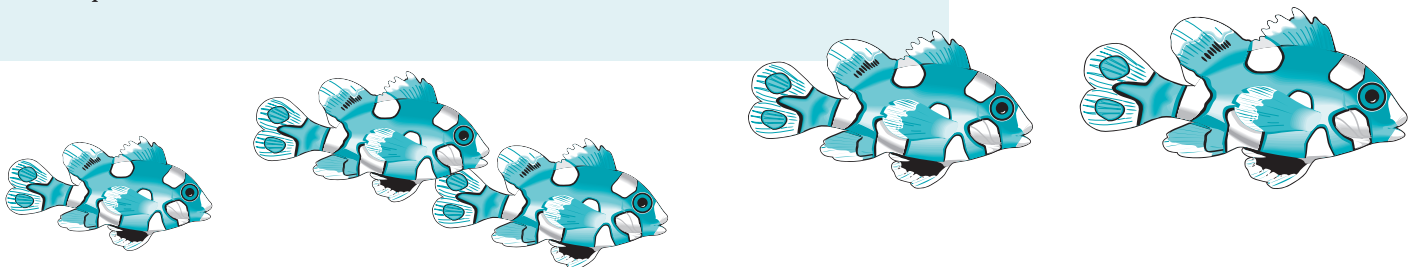
**Sean Kennan**, Ph.D. traveled to Hawaii February 8–March 4 to collaborate with Pierre Flament, Ph.D., and to attend the 2002 AGU Ocean Sciences Meeting where he presented a talk titled, "Vertical Structure of the NECC in the Eastern Tropical Pacific." Then from March 25–26 Kennan attended the EPIC Workshop in Seattle, Washington.

**Edward O. Keith**, Ph.D., and several of his graduate students, including **Christine Hudak**, **Amy Paine**, **Jennifer Schamitz**, and **Rebekah Walker**, attended the XIV Biennial Conference on the Biology of Marine Mammals, held November 28–December 3, 2001 in Vancouver, Canada. Keith presented a poster titled "A Regional Manatee Recovery Plan for the Alvarado Lagoon System, Veracruz, Mexico," which was coauthored by his collaborators from Mexico, Alejandro Ortega-Argueta from the Institute of Ecology and Enrique Portilla-Ochoa from the Institute of Biological Research, University of Veracruz. Hudak presented the results of her master's thesis in a talk titled "Habitat Utilization of Bottlenose Dolphins (*Tursiops truncatus*) in Biscayne Bay, Florida," that was coauthored by Joseph Contillo and Steven Swartz, both with the National Marine Fisheries Service, Southeast Fisheries Science Center, in Miami. 🐟

## Grants

**Edward O. Keith**, Ph.D., received a grant from the Florida Fish and Wildlife Conservation Commission (FWCC), to develop a "Boater Manatee Awareness System" that is designed to reduce manatee-vessel collisions, a major mortality factor for the Florida manatee (*Trichechus manatus latirostris*). This grant was funded as part of a Manatee Avoidance Technology Program newly funded by the FWCC and total funds awarded totaled \$6,911. These funds will, in part, support the work of **Amy Paine**, one of Keith's graduate students.

NSUOC was once again awarded the Broward County Sea Turtle Monitoring Project. The contract, with the Broward County Department of Planning and Environmental Protection, is for three years at approximately \$124,375 per year. The season runs from March 1 to September 30. The permit holds 25 people, including **Lou Fisher** (DPEP); **Curtis Burney**, Ph.D. (PI of the contract); project manager, **Stefanie Ouellette**; assistant manager, **Jeremy Barnes**; and 21 workers. This year, there are 14 experienced workers returning and 7 new workers. Beginning in August, Broward County will start a county-wide beach renourishment, which will directly affect the project. The responsibility for the protection of sea turtle nests will be even more important than ever. 🐢





## NSU Well Represented at AGU Ocean Sciences Meeting in Hawaii

The 2002 AGU Ocean Sciences Meeting held in Honolulu, Hawaii, February 11–15, had a cadre of NSU faculty, graduates, and ex-NSU faculty attending. The meeting brought together two former directors of the Oceanographic Center, **Dennis Moore** and **Julian P. McCreary, Jr.**, (currently on sabbatical); ex-faculty members **Pern Niiler**, **Mark Wimbush**, and **Andrew Moore**; and NSU graduates **Roland De Szoeko**, **Weiqing Han**, **Zuojun Yu**, and **Yasushi Fukamachi**. Also present were OC dean, **Richard Dodge** and faculty members **Alexander Soloviev** and **Sean Kennan**.

The 2002 Ocean Sciences Meeting was cosponsored by the American Society of Limnology and Oceanography (ASLO) and the American Geophysical Union (AGU). 🐡

(See more pictures on previous pages)



In front of some of the posters presented by OC and NCRI personnel at the 2002 Ocean Sciences Meeting in Honolulu. Discussing the posters with an interested passerby are (from left to right): Brian Walker, NCRI biological and geographical information specialist and OC student; Ryan Moyer, NCRI student research assistant and OC student; unknown passerby; Richard E. Dodge, NCRI executive director and OC dean; and Bernhard Riegl, NCRI research scientist and OC adjunct faculty. Also in attendance but not shown in this photo was Gregory McIntosh (NCRI director of the Caribbean and Latin American region).

### Other

**Andrew Rogerson**, Ph.D., has been asked to join the Advisory Board of the International Journal, *Protistology*. He is also currently an associate editor of the *Journal of Eukaryotic Microbiology* and on the editorial board of the *European Journal of Protistology*.

**Veljko Dragojlovic**, Ph.D., received the president's faculty scholarship award for 2001–2002 for the project Ruthenium Tetroxide Oxidation of Iodoalkanes.

**Gary S. Kleppel**, Ph.D., of SUNY Albany, and formerly an NSUOC faculty member, gave a seminar titled, "Functional integrity and urbanization of estuarine ecosystems in the southeastern United States," on February 25. 🐡

### Publications

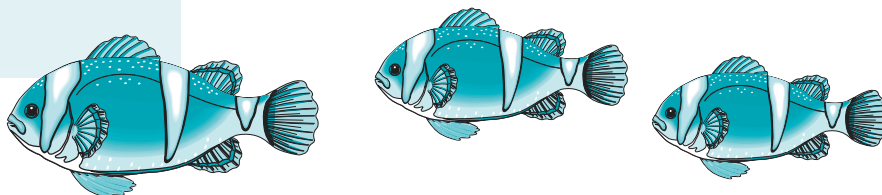
J. L. McCarty and **V. Dragojlovic**, Demonstrating of Allotropic Modifications of Sulfur; Re-creating Io's Volcanic Surface, *JCST*, 2001, 31, 265–267.

Y. L. Chow, D. Gao, and V. Dragojlovic, Multigram Scale Cobalt Catalyzed Photochemical Methoxy-carbonylation of Alkenes, *J. Mol. Cat. A: Chemical*, 2001, 171:1–2, 43–51.

V. Dragojlovic, A Method to Draw Cyclohexane Ring and its Substituents, *J. of Chem. Educ.*, 2001, 78, 923. 🐡

### High School Intern Participation

During the summer of 2001, **Edward O. Keith**, Ph.D., had Chris Shelly, a high school intern, participating in his research. Shelly helped with the assembly of the hydrophone system Keith purchased to augment his ongoing bottlenose dolphin (*Tursiops truncatus*) surveys in Port Everglades. Chris also researched and organized a new display for the lobby of the Forman Building comparing the bottlenose dolphin and the common dolphin (*Delphinus delphis*). See back cover for picture of Shelly with the display he developed. 🐡



## U.S. Commission on Ocean Policy Visits NSUOC

A site visit by commissioners of the United States Commission on Ocean Policy was held at the Oceanographic Center on February 21, 2002.

Congress created the commission in 2000. President George W. Bush appointed 16 people, among a slate of 24 individuals nominated by Congress and four by himself, to serve as members of the U.S. Commission on Ocean Policy. This commission is undertaking an 18-month investigation of ocean-related issues and will make far-reaching recommendations to the president and Congress for a comprehensive national ocean policy which will include the Great Lakes. The last similar review of the nation's ocean laws and policies was conducted in the late 1960s under similar legislation. Commonly known as the Stratton Commission, after its chairman Julius Stratton, that commission's 1969 report led to the creation of the National Oceanic and Atmospheric Administration (NOAA) and the passage of major legislation governing fisheries and coastal management.

Over the next 18 months, the current commission will assess a wide range of challenging issues, including stewardship of fisheries and marine life; responsible use of offshore oil, gas and nonliving resources; coastal storms and other natural hazards; ocean and coastal pollution; marine transportation; the role of oceans in climate change; oceanographic science and technologies; and international leadership and cooperation in marine affairs.

The National Academy of Sciences' Ocean Studies Board will help establish a science advisory panel to assist in ensuring the scientific reports presented to the commission are based on the best available information. During the course of its one-and-a-half year study, the commission is required to hold six regional meetings around the country. The commission will present its findings and recommendations in a final report to Congress and the president in the spring of 2003. (For more information on the U.S. Commission on Ocean Policy, go to their Web site at [www.oceancommission.gov](http://www.oceancommission.gov)).

For the visit to NSUOC, the U.S. Coast Guard Cutter *Gannet* ferried the group (Commissioners Ted Beattie, Paul Kelley, Marc Hershman, Ann D'Amato, and Jim Coleman) from Port Everglades to the Fort Lauderdale Coast Guard station located next to the NSUOC. The group then was transported to the center where they were treated to coffee and donuts and given an overview of the South Florida

Ocean Measurement Center (SFOMC), (of which NSUOC forms the North Campus) by Garth Jensen, executive director, SFOMC, U.S. Navy Carderock Division, followed by a welcome to NSU by Dean **Richard Dodge**. Content speakers followed and included, Professor **Andrew Rogerson**, NSUOC—ballast water issues; Dean Richard Dodge, executive director, NCRI—coral reef issues, regional and national; Grace Johns, senior associate, Hazen and Sawyer, Inc., and Broward County—Reef economics of South Florida; Professor **Richard Spieler**, NSUOC—

coral reef restoration issues; Jim Bohnsack, research fishery biologist, National Marine Fisheries Service, Southeast Fisheries Science Center, NOAA, and Nancy Thompson, director, Southeast Fisheries Science Center, National Marine Fisheries Service, NOAA—marine protected area issues.

From NSUOC, the group was then transported to FAU's SeaTech facility in Dania Beach for lunch and to listen to several more speakers. From there they were transported to the Diplomat Hotel for the day's final presentations. 🐠



*Commissioners meeting other guests over coffee.*



*Members of the U.S. Commission on Ocean Policy*



# MASTERCURRENTS

## INSTITUTE OF MARINE AND COASTAL STUDIES

### COASTAL ORNITHOLOGY

(CZMT-0640, MEVS-5050, OCMB-6400)

Examines the evolution, taxonomy, structure and function, behavior, natural history, and ecology of the members of the class Aves, with special focus on coastal and marine species. The course will include lecture and laboratory sessions, as well as a number of field trips. Thursdays, 6:30–9:30 p.m. **\$50 Lab Fee.** Instructor: Ed Keith

### INTRODUCTION TO MARINE GEOLOGY

(OCOR-5604)

Includes lecture topics ranging from plate tectonics and hydrothermal vents to the geological history of climate change and the geology of Florida. In addition, field projects will collect microfossils for species identification. Labs which use light and an introduction to scanning electron microscopy (SEM) for microfossil identification will be included. Preparation of a team research paper, as well as a library research paper in which individual reports and presentations will be made, is required. Field collections will be from several locations in Broward County, as well as from Florida and Whitewater Bays. There will be a mandatory field trip. **\$125 Lab Fee.** Mondays 6:30–9:30 p.m./Fridays 10:00 a.m.–1:00 p.m. Instructor: Pat Blackwelder

### BIOSTATISTICS

(OCOR-5606)

This is a basic course on the practical applications of descriptive and inferential statistics with emphasis on principles and methods of summarizing and analyzing biological data. Measures of central tendency, dispersion, and variability testing will be discussed along with basic concepts of probability distributions, hypothesis testing, and decision making. Topics will also include simple statistical tests; analysis of variance (ANOVA—single classification, nested, and two-way); linear regression; and correlation. Tuesdays 6:30–9:30 p.m. **\$50 Lab Fee.** Instructor: Mark Farber. 🐟

M.S. degree specialties are marine biology, coastal zone management, and marine environmental science. Each course carries three credit hours or may be audited. Tuition is \$475 per credit hour (50 percent less for audit). Classes meet once a week from 6:30 to 9:30 p.m. at the Oceanographic Center (unless otherwise specified.) The spring term runs from April 8–June 28 (unless otherwise specified). Registration (\$25 nonrefundable fee) begins two weeks prior to the start of classes. For further information, call Andrew Rogerson or Melissa Dore at (954) 262-3610 or 800-396-2326, or email [imcs@nova.edu](mailto:imcs@nova.edu). More information can be found at the Web site [www.nova.edu/ocean/](http://www.nova.edu/ocean/). 🐟

### Field Course

#### BELIZE BARRIER REEF ECOLOGY

(OCMB-8100)

Held at South Water Caye, Belize. This course will be an intensive hands-on learning experience at the magnificent barrier reef system of Belize. We will spend a majority of our time actually diving on the reef and in the waters of the lagoon and back reef. Students will experience first hand the great natural biodiversity of the pristine reef system of Belize. Students will undertake individual projects related to their thesis topic (if known). Housing and accommodations on the island are rustic, but adequate. Special diets cannot be accommodated.

**Prerequisites:** Invertebrate zoology, marine ecology, or equivalent. Students will need passports and will be required to pass a swim test prior to departure.

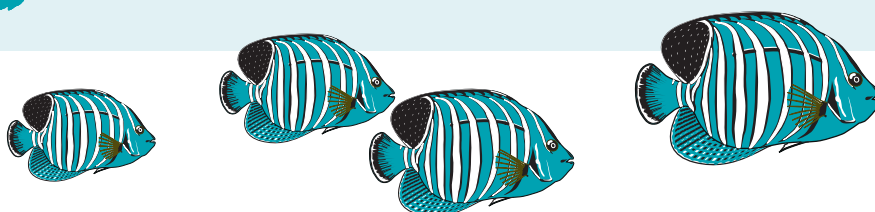
**Preparation:** The class will meet three times before departing for Belize to provide written material and background on the course. Attendance is mandatory. **\$1,300**

**Lab Fee.** Instructor: James Thomas

#### BIOLOGY OF SHARKS

(OCMB-6225)

Sharks have long held the fascination of humans, with resulting exploitation by the media to capitalize on this interest. Regrettably, a severe lack of understanding of the biology and natural history of sharks has resulted in numerous misconceptions about these fish and traditionally little attention to management and preservation of sharks as integral components of marine ecosystems. With increasing commercial and recreational fishing of sharks and the realization that these fish may need to be managed using different strategies than used for teleost fish, there is tremendous interest worldwide in researching and understanding the biology of sharks. This course will cover fundamental aspects of the biology of sharks, including systematics, evolution, reproduction, behavior, genetics, migration, conservation, fisheries management, and field research techniques. Wednesdays. **\$1,285 Lab Fee.** Instructor: Mahmood Shivji. 🐟



## Distance Education

### BIOSTATISTICS

(OCOR-5606)

We are frequently reminded of the fact that we are living in the information age. Appropriately, then, this course is about information—how it is obtained, how it is analyzed, and how it is interpreted. Selection of topics in the course was guided by three considerations: (1) What are the most useful statistical methods?; (2) Which statistical methods are the most widely used in journals in the biological, environmental, and health sciences?; and (3) Which statistical methods are fundamental to further study?

This course requires few mathematical prerequisites. Only reasonable proficiency in algebra is required for an understanding of the concepts and methods underlying the calculations. The emphasis continues to be on an intuitive understanding of principles rather than an understanding based on mathematical sophistication. Because the course is designed for people preparing for or already pursuing a career in the biological, environmental, and health sciences, the examples and exercises reflect the problems and activities that these people are likely to encounter in the performance of their duties. Instructor: Patrick Hardigan. 🐡

## Other Graduate News—Student Development Fund

The Graduate Program continues to hold a fund to assist students to travel to conferences to present papers or posters. Since this fund is relatively modest and has been subject to heavy use throughout 2001, the following guidelines are offered to help students apply for money.

Students are welcome to apply to the graduate faculty committee (comprising professors Rogerson, Messing, and Shivji) for funds to help facilitate travel to conferences. For an oral presentation, students can apply for up to \$300—for a poster presentation the maximum amount is \$100.

Students should submit their request to the director of the graduate program (Rogerson). They need to show evidence that travel/accommodation/ conference fees are equal to, or in excess of, the amount requested. They must also submit a copy of the abstract for consideration by the faculty committee. Only quality presentations will be supported since the development money pool is limited.

Awards will only be granted to an individual student once per year and no more than three awards will be granted to a professor's laboratory per year. 🐡

## Study Abroad

The NSU Oceanographic Center is offering an exciting new, jointly taught, M.S. degree in marine biology. The University Marine Biological Station Millport (UMBSM), field station of the University of London, has agreed to collaborate with the OC and will teach aspects of temperate marine biology. This will complement the sub-tropical focus of courses in Florida.

Students will spend the first seven months at the UMBSM (located on an island in Scotland, close to the mainland and 40 miles from the city of Glasgow). There, between September and March, students will take five elective courses and complete their capstone projects under the supervision of University of London faculty. The M.S. degree is a capstone degree encompassing five core courses, eight elective courses, and a six-credit capstone paper. Students will complete their degree at the OC in Florida, spending about 12 months taking the remaining core classes and electives. Although this is a shared NSU/University of London degree, the M.S. will be conferred by Nova Southeastern University. Thus all administrative issues will be handled by the NSU Oceanographic Center. Proposed start date is either September 2002 (conditional on enough interest) or September 2003. Full details from Andrew Rogerson, director of OC graduate programs (arogerso@nova.edu). 🐡

## Graduate Certificate in Coastal Studies

Beginning in the Spring of 2002, the Institute of Coastal Studies of the NSUOC will offer a distance learning graduate certificate in coastal studies. The certificate requires the successful completion of four distance courses. This certificate program is not open to students enrolled in M.S. or Ph.D. graduate programs. Full details can be obtained from the OC distance education coordinator, Jane Dougan (douganj@nova.edu). 🐡

## Defenses

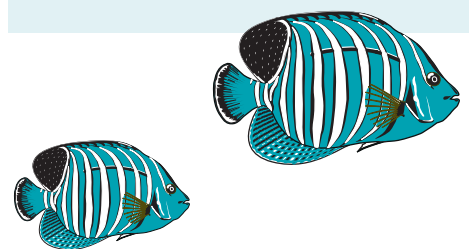
### THESIS

**Dawn M. Miller**, "Does Beach Crawl Width Correlate with Carapace Size in Loggerhead Sea Turtles (*Caretta caretta*)?" February 25. Committee members: Curtis Burney, Edward O. Keith, Lou Fisher (DPEP Biological Resources Division)

**Catherine A. Mattison**, "The Influence of Physical and Anthropogenic Factors on the Distribution of Loggerhead Sea Turtle (*Caretta caretta*) Nests in Broward County, Florida (1990–1999)." January 28. Committee members: Curt Burney, Edward O. Keith, and Lou Fisher (DPEP)

### CAPSTONE REVIEW

**Melinda Parrot**, "Invasions of Marine and Estuarine Environments by Nonindigenous Species—a Global Problem and its Management." January 11. Committee members: Stacy Myers and Bart Baca. 🐡







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## *Currents, Winter 2001/2002*



*Julian McCreary presenting birthday cake to Yasushi Fukamachi at AGU meeting in Hawaii.*



*High school intern Chris Shelly and his new dolphin display located in the lobby of the Forman Building.*



Editor: **Kathy Maxson**



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